



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
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① Alone

D3391-025
Job Sheet 183585



Part No: D3391-025

Job Qty: 1 ea

Part Name: Aft Tube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 9/21/18

Job Tracking No:

Due Date: 11/14/18

Created By: Marie Lajeunesse

Type: SOLD

Description:

Note: DWG REV J SHEETS 9,10,11 IPP Rev B 06-02-07 ECN773 dwg rev. D EC IPP Rev:C 06-03-28 Update
Manuf. Instructions JLM IPP rev D 07.03.20 revF dwg EC IPP rev E 07.11.07 rev G dwg ecn 1053p EC verified
by: DD IPP Rev:F 07-11-13 ECN 1056 DD verified by: EC IPP Rev:G 08-09-10 revH as per dwg DD verified
by:EC IPP Rev:H 11.11.14 AS PER REV.I DD verified by:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	11/14/18	11/14/18	0.00	0.00	Start Up Crosstubes		MD
100	Mori Seiki	1 pcs	11/14/18	11/14/18	2.49	4.17	Mori Seiki TL-40		MD
110	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC2-1		MD
112	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC5		DAS 38
120	CNC Vertical Machining	1 pcs	11/14/18	11/14/18	0.00	2.63	HAAS1-3		Kt 2018-10-17
130	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC2 Machining-2		Kt 2018-10-17
140	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC8 Machining-2		OCT 29 2018 68
150	Skidtubes	1 pcs	11/14/18	11/14/18	0.00	1.03	Skidtubes-4		MD
160	CNC Bend Skidtubes	1 pcs	11/14/18	11/14/18	0.00	1.33	CNC Bend Skidtube		MD
170	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC5		BE
180	Skidtubes	1 pcs	11/14/18	11/14/18	0.00	1.03	Skidtubes-4		DTF 3.7
190	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC5		38
200	HandFinish	1 pcs	11/14/18	11/14/18	0.00	0.58	HandFinish1		D.R 18/11/01
210	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC7-2		MD
220	Skidtubes	1 pcs	11/14/18	11/14/18	0.00	1.41	Skidtubes-4		MD
230	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC5		38
235	HandFinish	1 pcs	11/14/18	11/14/18	0.00	0.58	HandFinish2		D.R 18/11/12
240	SprayPaint	1 pcs	11/14/18	11/14/18	0.00	0.25	Spray Paint		bleed'd
242	Outsource	1 pcs	11/14/18	11/14/18			ATE003-VC		NOV 13 2018
250	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC14		2018-11-12
260	HandFinish	1 pcs	11/14/18	11/14/18	0.00	0.58	HandFinish4		DAS
270	QC	1 pcs	11/14/18	11/14/18	0.00	0.00	QC5		DAS 69
280	Packaging	1 pcs	11/14/18	11/14/18	0.00	0.00	Packaging3-1		NOV 14 2018 68
290	QC21-SA	1 Ea	11/14/18	11/14/18	0.00	0.00	QC21		DAS 9-89

Part Op 100 - Turn as per Folio FA599 Rev: J & Dwg D3391 Rev: J ***ensure steady rest is turning true****REMOVE
Descriptions: STEADY REST AND MACHINIG MARKS****

120 - 1-Machine as per Folio FA 599 Rev: J & Dwg D3391 Rev: J

140 - ***INSPECT INSIDE BORE***

150 - 1-Drill (PILOT HOLE) aft cap holes per Dwg D3391 using DT8803

160 - Form as per Dwg D3391 Using Bend Prog 3391025

180 - 1-Open Aft cap pilot hole to .208" as per Dwg D3391 2-Drill float bag holes using DT8809 as per Dwg D3391(Holes

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: 09

Work Order update only ☐

Work Order: _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS					
Part No. _____		Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐		
		Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐		
NCR No. _____		Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐		

Date : _____ Step #: _____

Description Work Order Deviation

Container No: S117649
Part: D3391 - 025
Job No: 183585
Serial No/Batch: S117649
 Revision: _____
 Inspector: _____
 Exp Date: _____
 Instructions: Various STC's

Date: 10/12/18



Root Cause			
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	
Design ☐	Operator ☐	Bending ☐	
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐
Past Expiry Date ☐	Manufacturing Process ☐		
Misidentified ☐	Past Due ☐	OTHER : _____	

marked "A" Only. 3-Drill wearplate holes as per Dwg D3391 using DT8878(Mid Tube) & DT8217 Wearplate Jig . *****Do Not Open To Finished Size***** 4-Drill Wearshoe holes as per DWG D3391 using DT8939 locating from 2 previously drilled aft wearplate holes. 5-Open wearplate holes to 0.297" and c'bore as per dwg D3391 6-Open up all float bag holes to 0.328" and c'sink as per Dwg D3391. 8- Scribe batch # on fwd end
 220 - 1- Instal spacers as per dwg D3391 A/R Magnabond 6398 Batch: 5080785 exp. date : 19/05/01 cure time 12hrs as per QSI0015 2- Grind crossbolts flush 3- Back drill using #9 drill 4- Touchup Magnabond 5- Deburr
 235 - AND REALODINE AS PER PAR09-043
 240 - PRIME AS PER DWG AND QSI005 4.2.1.3.3 PO04168T
 260 - 1-Install inserts as per Dwg D3391 2-Install Aft Cap as per Dwg D3391 A/ R Sikaflex-241/-291 M138943
 Sikaflex expiry date: 19/03 3- INSTALL WEARPLATES AS PER DWG
 290 - 5- Detail DD, open (5) forward wearplate holes 0.375", then use DT10247 and drill holes for nutplates and c'sink.
 6-Open wearplate holes to 0.297" and c'bore as per dwg D3391. ***SIX FARTHEST AFT HOLES ONLY*** 7-Open up all float bag holes to 0.328" and c'sink as per Dwg D3391. 8-Deburr 9- Scribe batch # on fwd end

B139426

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6014-090	Aluminum Extrusion	1 Ea (1 ea)	90-Start up Operation	
D3670-4-200	Bushing	4 Ea (4 ea)	220-Skidtubes	<u>5081002</u>
ALS4-1032-130	Rivnut	8 Ea (8 ea)	260-HandFinish	<u>5007279</u>
ALS4-1032-225	Rivnut	4 Ea (4 ea)	260-HandFinish	<u>5058138</u>
AN3C4A	Bolt	6 Ea (6 ea)	260-HandFinish	<u>5095223</u>
AN3C5A	Bolt	4 Ea (4 ea)	260-HandFinish	<u>5095214</u>
D2646	Aft Cap	1 Ea (1 ea)	260-HandFinish	<u>M163254-102</u>
D3672-1	Washer, Phenolic	2 Ea (2 ea)	260-HandFinish	<u>F164008</u>
D4095-047	Wearpad Aft	1 Ea (1 ea)	260-HandFinish	<u>5072814</u>
D4095-049	Wearpad Aft	1 Ea (1 ea)	260-HandFinish	<u>5003238</u>
MS20601-AD4W3	Rivet	12 Ea (12 ea)	260-HandFinish	<u>5092687</u>
MS20601-AD4W7	Rivet	8 Ea (8 ea)	260-HandFinish	<u>M137148</u>
MS21075L5	Nut Plate	10 Ea (10 ea)	260-HandFinish	<u>5093756</u>
NAS1149C0332R	Washer	10 Ea (10 ea)	260-HandFinish	<u>5089465</u>

M.U. 006445

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation	D6014-090	1	17	0
220-Skidtubes	D3670-4-200	4	43	0
260-HandFinish	ALS4-1032-130	8	12,174	0
	ALS4-1032-225	4	1,947	0
	AN3C4A	6	2,249	0
	AN3C5A	4	1,934	0
	D2646	1	68	0
	D3672-1	2	988	0
	D4095-047	1	23	0
	D4095-049	1	32	0
	MS20601-AD4W3	12	889	0
	MS20601-AD4W7	8	129	0
	MS21075L5	10	374	0
	NAS1149C0332R	10	5,211	0

Part Specifications

Specifications could not be found.

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER :							

①

DART AEROSPACE LTD		Work Order: 183585
Description: Float Skidtube (412)		Part Number: D3391-3
Inspection Dwg: D3391	Rev: J	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
Lathe Section						
14.000	+/-0.010	14.000	✓		Tape	
3.500	+/-0.010	3.497	✓		CNC-08	
Ø3.200	+/-0.010	3.205	✓		CNC-05	
Ø3.750	+/-0.010	3.754	✓		CNC-05	
30° x 0.060 chamfer	+/-0.010	.063	✓		CNC-08	
88.93	+/-0.030	88.93	✓		Tape	

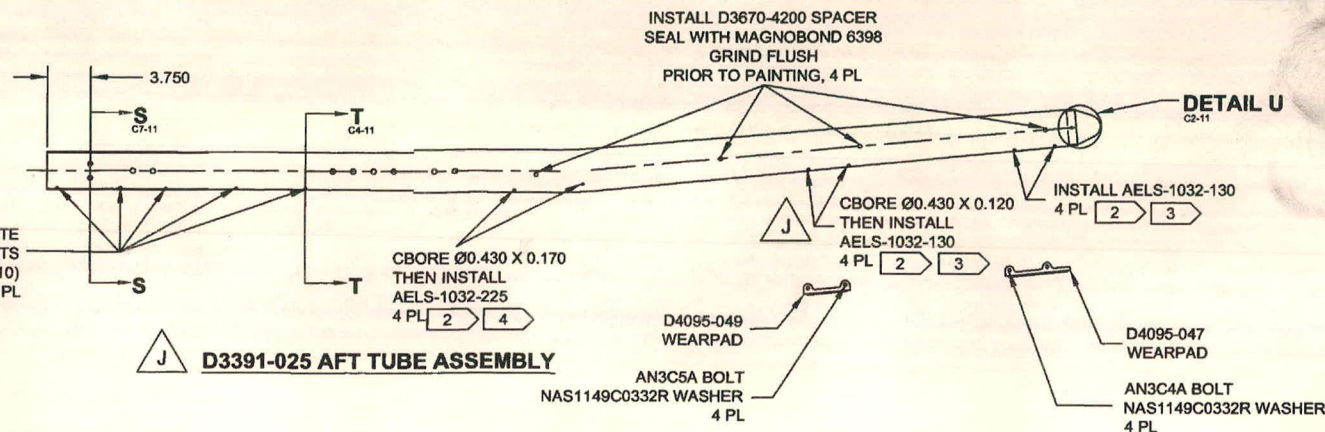
Measured by:	Date:
Audited by:	Date:

HAAS Section						
1.526	+0.000/-0.030	1.515	✓		Kt-05	verm.
7.500	+/-0.010	7.500	✓		" "	" "
27.750	+/-0.010	27.750	✓		TAPE	—
31.750	+/-0.010	31.750	✓		" "	" "
35.250	+/-0.010	35.250	✓		" "	" "
3.300	+/-0.010	3.301	✓		SL-05	micrometre.
0.200	+/-0.010	0.200	✓		Kt-05	verm.
3.520	+/-0.010	3.517	✓		SL-05	micrometre.
0.687	+0.010/-0.000	0.688	✓		Kt-05	verm.
R0.062	+/-0.010	0.0625	✓		12-G	—
Ø0.484	+0.005/-0.001	0.484	✓		Kt-05	verm.

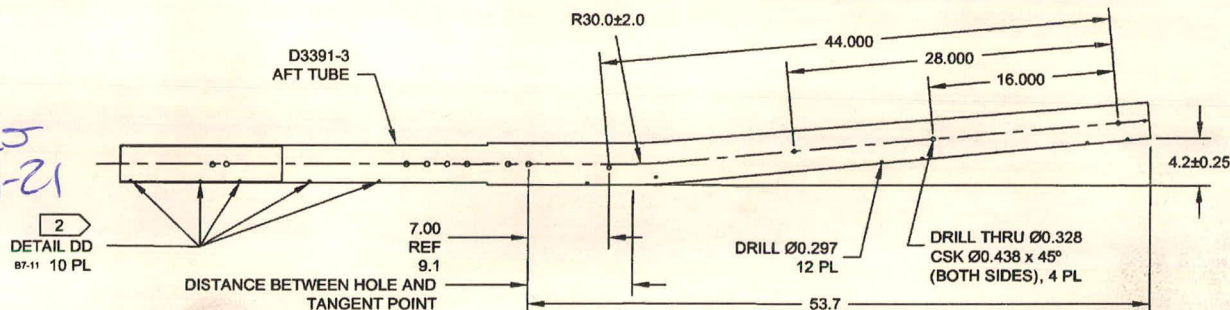
Measured by: KT 1	Date: 2018-10-17
Audited by: 9-89	Date:

Rev	Date	Change	Revised by	Approved
A	06.04.24	New Issue P/O D3391-015/-025	KJ/JLM	
B	06.06.19	Dwg revision update	KJ/JLM	
C	07.04.20	Ø0.208 dimension removed	KJ/JLM	
D	07.09.06	0.400 dimension removed	KJ/JLM	
E	07.11.23	Dwg Rev. updated	KJ/EC/DD	
F	09.04.27	Dimensions updated per Rev H and NCR09-028	KJ/JLM	
G	09.11.16	Dimension 0.200 removed	KJ	
H	11.06.21	Dimension 44.995 removed	KJ	
I	12.05.15	Dwg Rev updated	KJ	
J	12.05.23	Dimension updated	KJ	
K	12.10.15	88.93 dimension removed	KJ	
L	12.11.28	88.93 dimension added	KJ	
M	16.06.23	Dimensions updated per Rev J	KJ	

SHOP COPY
RETURN TO
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UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 183585 MJS
18-09-21



D3391-025 AFT TUBE ASSEMBLY



BENDING AND DRILLING DETAIL

D3391-025 AFT TUBE ASSEMBLY PARTS LIST

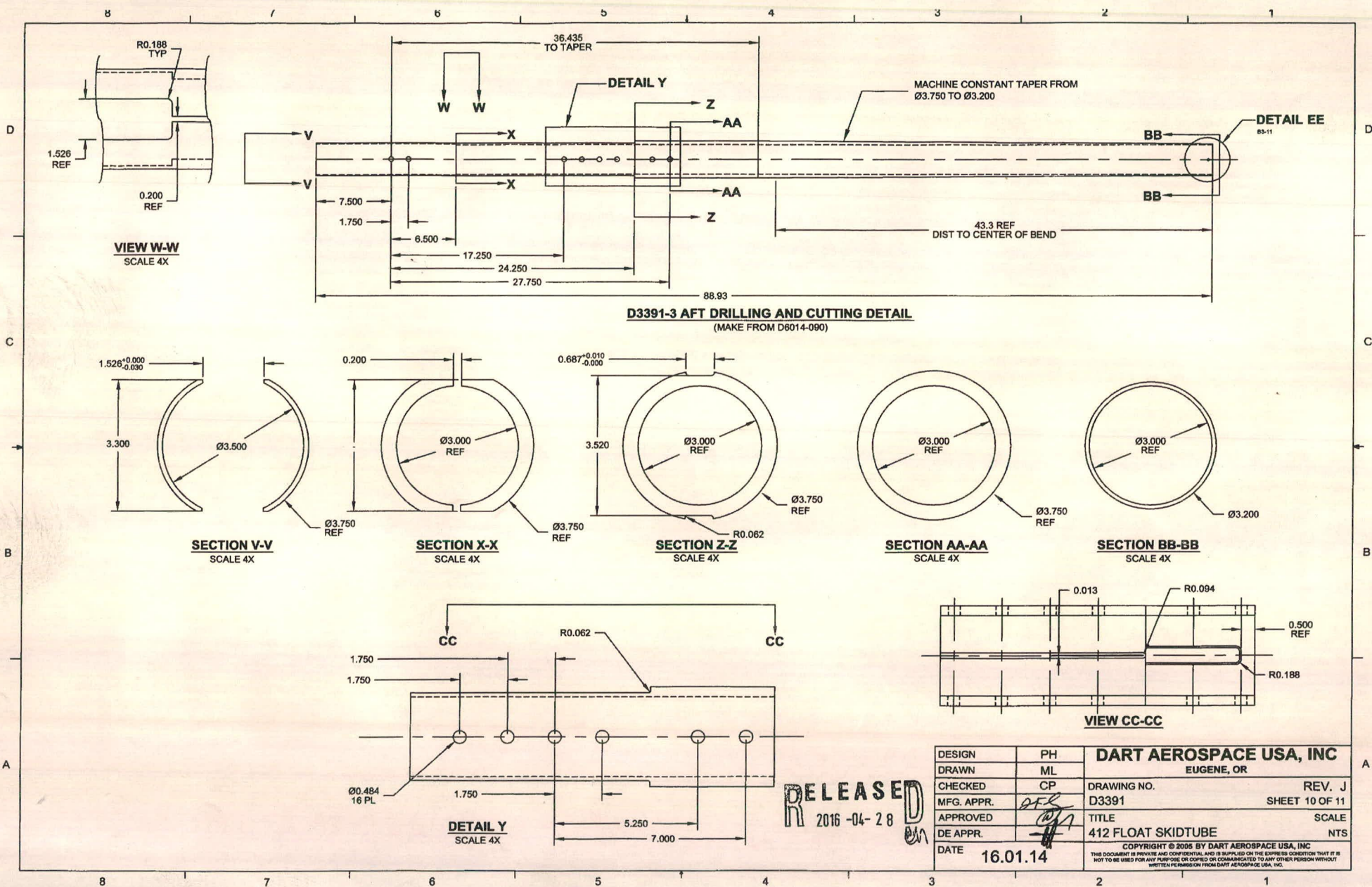
QTY	PART NUMBER	DESCRIPTION
X	D3391-025	AFT TUBE ASSEMBLY
1	D2646	AFT CAP
1	D3391-3	AFT TUBE
4	D3670-4200	SPACER
2	D3672-1	WASHER
1	D4095-049	WEARPAD
1	D4095-047	WEARPAD
8	AELS-1032-130	INSERT
4	AELS-1032-225	INSERT
6	AN3C4A	BOLT
4	AN3C5A	BOLT
20	MS20601AD4	RIVET, BLIND
10	MS21075L5	NUT PLATE FLOATING
10	NAS1149C0332R	WASHER

NOTES:

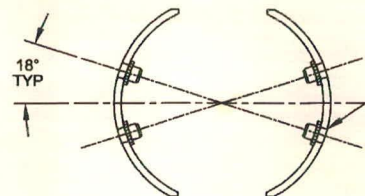
- 1) COAT ALL EXPOSED FASTENERS WITH LPS "LPS PROCYON"
- 2) USE DART DRILL TEMPLATE DT8217 TO LOCATE AND DRILL Ø0.297 AND Ø0.375 HOLES FOR WEARSHOE INSERTS AND NUTPLATES. CBORE AS NOTED AND INSTALL INSERT/NUTPLATES EXCEPT WHERE INDICATED. USE NUT PLATE DRILL JIG IF REQUIRED.
- 3) ENSURE WALL THICKNESS IS BETWEEN 0.070 AND 0.130 BEFORE INSTALLING INSERT
- 4) ENSURE WALL THICKNESS IS BETWEEN 0.130 AND 0.225 BEFORE INSTALLING INSERT

RELEASED
2016-04-28

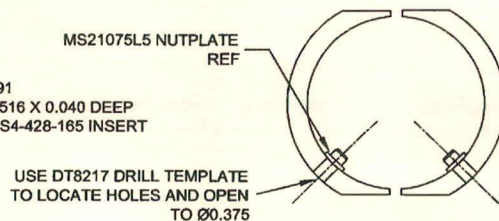
DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	<i>SAE</i>	D3391	SHEET 9 OF 11
APPROVED	<i>BA</i>	TITLE	SCALE
DE APPR.	<i>#</i>	AFT TUBE ASSEMBLY	NTS
DATE	16.01.14	COPYRIGHT © 2006 BY DART AEROSPACE USA, INC	
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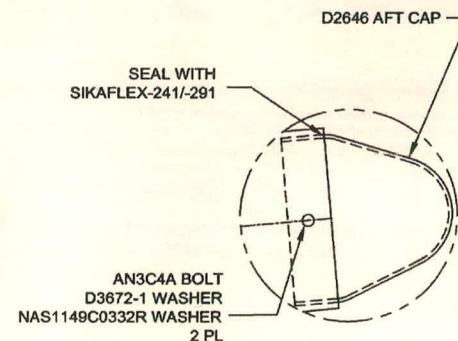
RELEASED
2016-04-28



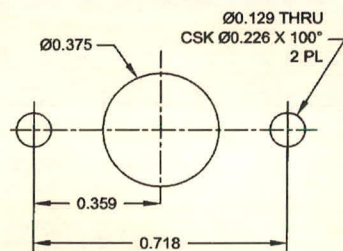
SECTION S-S
D6-8,9
SCALE 5X



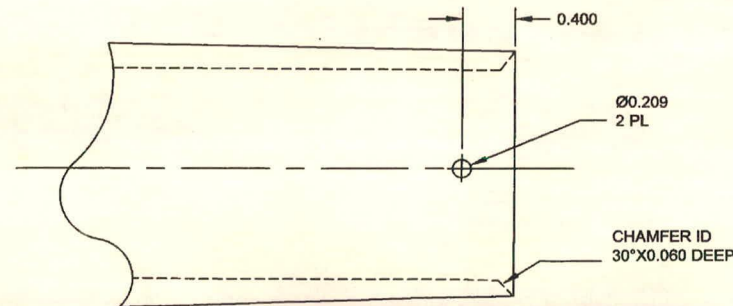
SECTION T-T
D6-8,9
SCALE 5X
5 PL
J



DETAIL U
D1-8,9
SCALE 5X



DRILLING DETAIL DD
SCALE 10X
D7-8,9
1



DETAIL EE
SCALE 2X
D1-11
J

NOTES:
1) USE INDUSTRY STANDARD NUT PLATE DRILL JIG IF REQUIRED.

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.		D3391	SHEET 11 OF 11
APPROVED		TITLE	SCALE
DE APPR.		AFT TUBE ASSEMBLY	NTS
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Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO041685

Supplier: ATE003-VC
Atelier Debosselage
358 Principale
Calumet
QC
J0V 1B0 Canada
Phone: 819 242 5633

PO No: PO041685
PO Date: 11/12/18
Due Date: 11/16/18
Purchase Order Revision:
Revision Date:
Ship-To Contact: Phone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pynt Termis: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	183590	D3391-025	Aft Tube Assembly : Various STC's	Firmed	-	11/16/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
			PRIME AS PER DWG AND QSI005 4.2.1.3.3		1x	NOV 13 2018					
	183586		1x NOV 13 2018	Firmed	-	11/16/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
	183585		1x NOV 13 2018	Firmed	-	11/16/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
	183588		1x NOV 13 2018	Firmed	-	11/16/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
Sub Total:							4	0	4		\$500.00
2	184430	D3391-023	Mid Tube Assembly : Various STC's	Firmed	-	11/16/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
			PRIME AS PER DWG AND QSI005 4.2.1.3.3 PRIMER BATCH: _____		1x	NOV 13 2018					
Grand Total:											\$625.00



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO041685

Order Notes

Procurement Quality Clauses

A005 right of entry
A012 chemical and physical test report
A016 personnel qualification
A017 raw material identification (as applicable)

A022 Apical Processing
A024 process certifications
A026 certification of material conformance

A041 quality management system
A042 dart notification by supplier
A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 11/12/18 10:32 AM dart.tsimiklis.chrisoula

